

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended): A single sensor color image pickup device for picking up a color image, comprising:

a pixel group placed in an array of a plurality of pixels of photoelectric conversion elements; and

a three-colored coding array corresponding to the pixel group, arranged in a randomized array satisfying predetermined minimum color density conditions but having no regularity;

wherein the three-colored coding array arranged in the randomized array directly picks up the color image,

wherein each of the colors of the three-colored coding array are not mixed.

Claim 2 (Previously Presented): The single sensor color image pickup device according to claim 1, wherein said three-colored coding array comprises a three-colored filter.

Claim 3 (Currently Amended): A single sensor color image pickup apparatus for picking up a color image, comprising:

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a color image pickup device having a pixel group placed in an array of a plurality of pixels of photoelectric conversion elements and a three-colored coding array corresponding to the pixel group, arranged in a randomized array satisfying predetermined minimum color density conditions but having no regularity;

the three-colored coding array arranged in the randomized array directly picks up the color image; and

three-colored separation means for performing color separation processing of output signals of the color image pickup device in accordance with the random three-colored coding array of the color image pickup device,

wherein each of the colors of the three-colored coding array are not mixed.

Claim 4 (Previously Presented): The single sensor color image pickup apparatus according to claim 3, wherein said three-colored coding array comprises a three-colored filter.

Claim 5 (Previously Presented): The single sensor color image pickup apparatus according to claim 3 further comprising storage means for storing array data concerning the random three-colored coding array of said color image pickup device, for performing color separation processing at said three-colored separation means.

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Claim 6 (Previously Presented): The single sensor color image pickup apparatus according to claim 5, wherein said storage means comprises mask ROM.

Claim 7 (Previously Presented): The single sensor color image pickup apparatus according to claim 5, wherein said storage means comprises EEPROM.

Claims 8 – 20 (Canceled).

Claim 21 (Currently Amended): A single sensor color image pickup device for picking up a color image, comprising:

a pixel group placed in an array of a plurality of pixels of photoelectric conversion elements; and

a three-colored coding array corresponding to the pixel group, arrayed in a randomized array satisfying predetermined color distributing conditions and satisfying predetermined minimum color density conditions but having no regularity;

wherein the three-colored coding array arranged in the randomized array directly picks up the color image,

wherein each of the colors of the three-colored coding array are not mixed.

Claim 22 (Previously Presented): The single sensor color image pickup device according to claim 21, wherein said three-colored coding array comprises a three-colored filter.

Claim 23 (Currently Amended): A single sensor color image pickup apparatus comprising:

a color image pickup device having a pixel group placed in an array of a plurality of pixels of photoelectric conversion elements and a three-colored coding array corresponding to the pixel group, arrayed in a randomized array satisfying predetermined color distributing conditions and satisfying predetermined minimum color density conditions but having no regularity;

the three-colored coding array arranged in the randomized array directly picks up the color image; and

three-colored separation means for performing color separation processing of output signals of the color image pickup device in accordance with the random three-colored coding array of the color image pickup device,

wherein each of the colors of the three-colored coding array are not mixed.

Claim 24 (Previously Presented): The single sensor color image pickup apparatus according to claim 23, wherein said three-colored coding array comprises a three-colored filter.

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Claim 25 (Previously Presented): The single sensor color image pickup apparatus according to claim 23 further comprising storage means for storing array data concerning the random three-colored coding array of said color image pickup device, for performing color separation processing at said three-colored separation means.

Claim 26 (Previously Presented): The single sensor color image pickup apparatus according to claim 25, wherein said storage means comprises mask ROM.

Claim 27 (Previously Presented): The single sensor color image pickup apparatus according to claim 25, wherein said storage means comprises EEPROM.

Claim 28 (Withdrawn): A single sensor color image pickup apparatus for picking up a color image, comprising:

a color image pickup device having a pixel group placed in an array of a plurality of pixels of photoelectric conversion elements and a color coding array corresponding to the pixel group, arranged in a randomized array and satisfying predetermined minimum color density conditions;

the color coding array arranged in the randomized array directly picks up the color image;

storage means for storing array data concerning the color coding array and pixel defect data of the color image pickup device; and

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color separation means for generating color signals in accordance with the color coding array data stored in the storage means,

wherein said color separation means performing a predetermined pixel defect correction in the color signal generating process based on the pixel defect data stored in said storage means.

Claim 29 (Withdrawn): The single sensor color image pickup apparatus according to claim 28, wherein said color coding array comprises a color filter.

Claim 30 (Withdrawn): The single sensor color image pickup apparatus according to claim 28, wherein the predetermined pixel defect correction processing by said color separation means comprises processing where an output signal of a fault pixel is supplemented by using an output signal of the pixel nearest to the fault pixel among the pixels of the same color as the color of signal to be supplemented for the fault pixel.

Claim 31 (Withdrawn): The single sensor color image pickup apparatus according to claim 28, wherein said storage means comprises EEPROM.

Claim 32 (Withdrawn): The single sensor color image pickup apparatus according to claim 30, wherein said storage means comprises EEPROM.

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Claim 33 (Previously Presented): A single sensor color image pickup device comprising:

- a pixel array having two-dimensionally arranged pixels, for effecting photoelectric conversion of an incident optical image; and
- a three-colored separation filter for guiding the incident optical image to each pixel of said pixel array in a manner separated into a plurality of primary colors;

wherein said three-colored separation filter has a random three-colored arrangement satisfying minimum color density conditions but having no regularity and directly picks up the color image,

wherein each of the colors of the three-colored coding array are not mixed.

Claim 34 (Previously Presented): A single sensor color image pickup system comprising:

- a color image pickup device comprising a pixel array having two-dimensionally arranged pixels for effecting photoelectric conversion of an incident optical image and a three-colored separation filter for guiding the incident optical image to each pixel of said pixel array in a manner separated into a plurality of primary colors, said three-colored separation filter having a random three-colored arrangement satisfying minimum color density conditions but without regularity and directly picking up the color image;
- a preprocess circuit for at least converting output of said color image pickup device into digital signals;

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a memory device for storing color restoration data corresponding to the three-colored arrangement of said three-colored separation filter; and

a digital processing circuit for generating digital image signals restored to predetermined color space, based on the digital signals outputted from said preprocess circuit and the color restoration data stored at said memory device,

wherein each of the colors of the three-colored coding array are not mixed.